AVIATION

THE OLDEST AMERICAN AERONAUTICAL MAGAZINE

A McGRAW-HILL PUBLICATION . . . ESTABLISHED 1916

EDWARD P. WARNER, *Editor*

Index to
VOLUME 27
July 6 to
December 28, 1929

Published Weekly by
McGRAW-HILL PUBLISHING COMPANY, INC.
NEW YORK

R. SIDNEY BOWEN, JR.
Associate Editor

LESLIE E. NEVILLE
Technical Editor

DEANE DAVENPORT

DAVID J. LEISK

CHARLES F. MCREYNOLDS
Pacific Coast Editor

AVIATION

The Oldest American Aeronautical Magazine

EDWARD P. WARNER, *Editor*
JAMES H. MCGRAW, JR., *Publishing Director*

HERBERT F. POWELL
News Editor

EARL D. OSBORN
Contributing Editor

CHARLES H. GALE

CHARLES E. NOYES

JOHN T. NEVILL
Detroit Editor

McGraw-Hill Publishing Company, Inc., New York City

VOLUME 27

July 6 to December 28, 1929

GENERAL ALPHABETICAL INDEX

	Pages
July 6	1 to 112
July 13	113 to 162
July 20	163 to 212
July 27	213 to 248
August 3	249 to 288
August 10	289 to 324
August 17	325 to 374
August 24	375 to 452
August 31	453 to 498
September 7	499 to 552
September 14	553 to 590
September 21	591 to 646
September 28	647 to 690
October 5	691 to 732
October 12	733 to 774
October 19	775 to 830
October 26	831 to 872
November 2	873 to 918
November 9	919 to 960
November 16	961 to 1006
November 23	1007 to 1054
November 30	1055 to 1096
December 7	1097 to 1142
December 14	1143 to 1192
December 21	1193 to 1246
December 28	1247 to 1288

A

Abstracts:
- Aerodynamic theory and test of strut forms. R. H. Smith....1286
- Aviation is fundamentally sound. Archibald Black....1051
- Aviation statistics....1051
- Cantilever wings for modern aircraft. H. J. Stieger....1140
- Developing a new weather service for New England's aviators....1244
- Full scale investigation of the drag of a wing radiator. Fred E. Weick..1190
- Good roads for airplanes. Graham B. Grosvernor....1139
- Prediction of airfoil characteristics. George J. Higgins....1286
- Progress of aviation in the Argentine..1094
- Solving the problem of fog flying....1140
- Some experiments on autorotation of an airfoil. Shatswell Ober....1190
- Talk on aviation. Harvey L. Williams....1051
- Welding of stainless materials. H. Bull and Lawrence J. Johnson....1190
- Welding rustproof steels....1245
- Wind tunnel tests of scale models of airplanes....1093

Accidents and Accident Prevention:
- Accident causes in the spotlight (ed) 1097
- Air mail fatalities decrease.... 551
- Causes of T.A.T. crash as submitted to Senate.... 949
- Dropped cigars prove menace.... 346
- Figures on air falatities.... 760
- Government report on airway fatalities....1279
- Lesson of the air meet (ed).... 871
- Menace to large cities (ed)....1243
- New Mexico tragedy (ed).... 555
- Preventing and extinguishing aircraft fires. Lieut. Comdr. C. G. McCord (F.)....*1265
- Safety work in aviation. Edward P. Warner (F.)....*749
- Unwarranted criticism. Martin P. Devereaux (L.)....1093

Advertising:
- Advertising pays. R. Sidney Bowen..*222
- Aerial, company in Columbus (O.)...1035
- Aerial roof (ed).... 959
- Bleriot develops aerial, device.... 867
- Sign board readable from air and road....*487
- Showmanship in scenic air tours. Willis Parker (F.)....*936

Aerial Displays. See Races.

Aero Medical Association organized in Detroit.... 856

Aerodynamics:
- Air racing—technique and tactics (F.) Lieut. James H. Doolittle....*382
- Estimation of the characteristics of modified airfoils. Shatswell Ober (F.).... 830
- Induced drag viewpoint of performance. Clark B. Millikan.... 364
- Integration of the theoretical expression for drag. Charles Boehnlein (F.).... 826
- Production of lift by propeller blades. Max M. Munk (F.).... 816
- Tail spins. Capt. Harry A. Sutton (F.)....*1196

Aeronautic Division of A.S.M.E. holds meeting....1085

Aeronautical Chamber of Commerce:
- Air Transport Section of, holds first conference.... 953
- Announces change in manufacturing requirements.... 180
- First National Air Traffic Conference. John T. Nevill (F.)....*653
- For the common welfare (ed).... 554
- Holds New England airport meeting.. 683
- Production report.... 694
- Talks of many things. Edward P. Warner (F.)....*519

Aeronautical Credit Conference, first, at Cleveland....543

Aeronautical directory issued by Detroit Board of Commerce....1174

Aeronautical equipment, American export trade in.... 710

Aeronautics:
- American military and naval development.... 712
- Federal budget and (F.)....1255
- Ford Motor Co. and American aeronautical development. John T. Nevill (F.) *41, 229, 306, 339, 568, 753
- N.A.C.A. report presented to Congress 1126
- The president compliments the industry (ed)....1143
- Review of aviation accomplishments, an interview with Harry F. Guggenheim. Frank L. Curtis (F.)....1011
- Survey of Canadian commercial aviation. J. A. Wilson (interview by Fay Leone Faurote) (F.)....*1250
- U. S. leads in civil aircraft development.... 543
- What racing did for the Italian industry (F.) Commander Silvio Scaroni....*400
- Clarence M. Young named Assistant Secretary of Commerce for....*483

Aeronautics Branch. See U. S. Aeronautics Branch.

Aeronautics Division Inspectors hold meeting at Kansas City.... 946

Air budget calls for $95,387,624.....1173

Air heater, Buhl Aircraft Co.....*190

"Air Law Review" to begin publication..1121

Air Mail:
- Aerial Express Corp., Ltd., first line to haul freight exclusively.... 952
- Airport post office. Howard Huyler Means (F.)....*1259
- An anniversary (ed).... 164
- Aristocrats of the air (ed).....1005
- Crosses equator (ed).... 251
- Device, now used on regular line....*551
- Fatalities decrease.... 551
- Intelligent use of (L.) W. Irving Glover.... 772
- Legal responsibilities of carriers of goods and baggage by air. Leo T. Parker (F.)....*938
- New route proposed between N. Y. and St. Louis.... 318
- Operation of the Thompson Aeronautical Corp. lines. John T. Nevill (F.)....*606

Pan American Airways operates Miami-Santiago service.... 318

Pan American opens extension in.... 549

Pick-up device tested.....*1181

Progress reported in Australia..... 495

Rate revision (ed).... 249

Rates under discussion, 188, 765, 803, 863, 907, 952, 997

Routes for Southwest announced....1234

Service to Chile.... 159

Southwestern, route hearing held....1130

Statistical picture of the (F.).....1027

Statistical report for October.....1235

"Tests" (ed).... 325

*Illustrated; (ed) Editorial; (F) Feature article; (L) Letter; (P) Patent

U. S., operation and traffic..... 706
U. S.-Guiana inspection under way... 187
Varney opens new northwest line.... 625
Western Union has parcel express system 448
Air planning (ed).....1285
Aircraft and the thunderstorm. W. J. Humphreys (F.) 981

Aircraft Construction:

British methods of steel. W. H. Sayers 203
British state airship R101 (F.)....*850
Fokker F-32 transport monoplane (F.) *926
General mailplane. Leslie D. Neville (F.) *839
Hall shipboard fighter. Leslie E. Neville (F.) *1067
Handling personnel in the aircraft factory. Elwood D. Ullman, Jr. (F.). *1111
Heat treatment of alloy steels in. C. B. Phillips (F.)..... *781
Opal rocket plane (F.)..... *931
Production methods at the Great Lakes Aircraft Plant. Walter E. Burton (F.) *970
Refining details (ed).....1249
Weight control in design of aircraft (F.) Frederic Flader.....360, 820
Wing analysis. Jean Fradis and Armand Thieblot, diags.....195, 644
Airfoils, estimation of the characteristics of modified. Shatswell Ober (F.)... 830
Airlines. See Transportation.
Airmanship triumphs (ed).....1139
Air-mindedness (ed).....1008

Airplanes:

Airplane command. Lessiter C. Milburn (L.) 958
Airplane with pivoted wing (P.).....1287
Avro "Antelope" 262
Bellanca "Tandem" (F.)..... *659
Bleriot produces four-engined plane .*1185
Burnelli monoplane entry in Safety Competition *1149
Chronology and tabulation of, records 425
Code of manufacturing modiefied... 180
Dornier discusses large flying boats..1124
Dornier DO.-X. Lieut. Comdr. James M. Shoemaker (F)..... *1207
Dornier flying boat successful..... *245
Emsco "Challenger" tri-engined monoplane (F.) *746
"Emsco Cirrus" monoplane..... *982
Everly biplanes *986
Fleet biplane entry in safety competition *1150
Fleetcraft biplane *984
Flying boat built by Liore-et-Olivier .*1134
Forecast of the Cleveland show (F.) Leslie E. Neville..... 387
Handley-Page entry in safety competition *1146
Heinkel catapult, on S.S. Bremen (F.) *263
Helicopter plane has wing propellers. *1033
High speed as safety factor in. J. Don Alexander (F.) *1117
In the all-European light plane tour. Earl D. Osborn (F.)..... *560, 586
Junkers G 38 in successful test flight. *1186, 1187
Junkers makes all-metal light sport plane *321
Kitty Hawk, Kinner powered..... *262
"Land" on airship..... 152
Lascoter Australian monoplane described *1090
Lockheed low-wing completed for Lindbergh *1080
Metal "Fleetser" proved fast in tests *1038
Monoplane, Tunison "Scout." Col. R. S. Hartz ..... †*137
Monowheel Loening *444
New cabin model produced by Nieuport *1091
New pursuit plane built in Sweden..*629
Number of, by states..... 546
Ogden "Osprey" tested at Los Angeles *1175
Penaud and Canard. Joseph Blondin (L.) 870
Penaud vs. the Canard types. Albert Merrill 369
Production, in 1929..... 151
Progress of the Guggenheim Competition (F.) *974
Roamair biplanes *984
"St. Louis Robin" (F)..... *269
Saving the relics (ed).....1139
Second hand planes (ed).....1189
Slots on the Handley-Page. T. H. England (L) 1049
Soundproofing of, cabins. V. L. Chrisler (F) *1021
Spartan C-3, J-6 powered..... *261
Specifications, manufacturer's .....
Specifications of, at the Olympia Show 462
Taylor entry in safety competition..*1151
Technical aspects of the Cleveland Exposition. Leslie E. Neville (F) *502
That swim (ed)..... 630
"Three Sea Hawks." Los Angeles races one year after. Charles F. McReynolds (F) *432
Training plane designed by Knoll...*1270
Twin-engined Savoia racing plane at Calshot *731
Value of, racing and stock model. C. S. Jones (F)..... *422
Who commands an airplane? (ed).... 290
With abnormal spinning characteristics. Lieut. Ralph A. Ofstie (F)..... *1203

Airplanes—Commercial:

Boeing (model 100) sport plane..... *225
Fifth annual National Air Tour. John T. Nevill (F)..... *670, 736
Fokker F-14 parasol mail plane on market *675
Fokker F-32, transport monoplane (F) *926
Freight carrier, Vickers "Vellore"... *170
Marketing the light commercial plane. Jack W. Duelks..... *252
New Fokker F-32..... *619
Overland Sport Trainer..... *261
Ryan B-5 Brougham (F)..... 336

Airplanes—Military:

American military and naval development 712
Hall shipboard fighter. Leslie E. Neville (F) *1067
"Saratoga" goes on the night shift (ed) 500
Thomas-Morse to build 70 all-metal observation planes 761

Airports:

Airport control (ed)..... 775
Airport post office. Howard Huyler means (F) *1259
Airport vs. airfield. Earle Ovington (L) 1048
Airport visibility (ed).....1248
Air-rail station at Port Columbus. Walter E. Burton (F)..... *889
And progress. Hyde Sweet, Nebraska City News-Press (ed)..... 773
Boston development progresses..... *729
Building tile for, "Natco"..... 161
Bulletins on airport management ready, at Aeronautics Branch..... 806
Central Airport at Camden, N. J., dedicated 685
Columbus (O) port..... 187
Conferences held in Atlanta and Washington 864
Country has 1520..... 909
Denver dedicates new port..... 909
Development work continues..... 54
Distribution of, and landing fields in U. S. 708
Fresno, Cal., dedicates new port....*1087
Heating and ventilating for airport buildings. E. C. Blackburn, †130, 146, 171
Lighting development for. C. E. Wietz (F) *1100
Los Angeles men win design contest *1181
Los Angeles Metropolitan. Charles F. McReynolds (F) *256
Making the airport pay for itself. J. E. Bullard and Avery E. Lord (F) *932, 1023
Map showing Alaska..... 448
More grass and less dust. M. S. Huckle (L) 1004
New Orleans to have naval port..... 806
Port charges adopted at Port Columbus 1183
Prize offered to community showing most progress in airport construction 585
Rating of. Earl Ovington (L)..... 1092
Rating of, urged..... 1086
Road Builders' consider municipal. Charles H. Gale (F)..... 883
Specifications (ed) 648
Uniform rules for..... 1042
Western Air Express airport has new "Hexhangar," one and one-half acres of hangar floor space under one roof. Charles F. McReynolds (F) *556
Western conference on (F) *1062
Work begun at North Beach, Queens, site *1184
Airport Construction Projects....54, 158, 188, 244, 282, 320, 352, 450, 494, 550, 584, 628, 686, 730, 768, 808, 866, 910, 954, 999, 1044, 1088, 1132, 1184, 1236, 1280

Airships:

Across the Pacific (ed)..... 132
A triumph of faith (ed)..... 454
Base sites for, considered..... 1272
British state airship R-101 (F)..... *850
Circum-avigation of globe completed by Graf Zeppelin..... 542
First flights of the metal-clad ZMC-2. John T. Nevill (F) *474
Goodyear-Zeppelin dock at Akron, Ohio. Walter E. Burton (F)...*1214
Graf Zeppelin flies over Pacific to U. S. 484
Graf Zeppelin makes third Atlantic crossing *309
Horsepower vs. man power (ed)..... 833
Interesting facts about the Graf Zeppelin 342
Navy accepts ZMC-2..... 674
Nine starts—eight successes—no disasters (ed) 501
R-101 rides gale at mooring mast successfully 1134
Reliable power plants for the. Lieut. Comdr. James M. Shoemaker (F).*1158
Some aspects of the Graf Zeppelin's flight around the world. Captain Sir Hubert Wilkins (F)..... *594
Third Atlantic crossing of Graf Zeppelin *309
Trials of R-101 satisfactory...911, 1046
Work started on ZRS-4 at Akron....*991

Airway Marking:

Air-mark Ohio for National Races... 53
Better, urged by Hingsburg..... 157
Marking Blankville (ed).....1098
New system of, developed by Aeronautical Branch 626
Pointer for Birmingham (ed)..... 959
Alcohol and altitude (ed), 290; C. S. Jones (L.) 772
Altimeter, improved Paulin.....*771
Altimeter, Kollsman sensitive.....*917
Altimeter, Lufft 247

American Electrochemical Society:

Discusses light alloys in aircraft manufacture (F) *740
American Road Builders' Association consider municipal airports. Charles H. Gale (F)..... 883
American Society of Mechanical Engineers:
Seaplane meeting at Cleveland. Edward P. Warner (F).....*571

Australia:

Aerial medical work success in..... 629
Metal monoplane built in..... 552
Progress in air mail in..... 495

Autogiro:

Climbs 12,000 feet in Spain..... 160
Discussed. Harold F. Pitcairn (L).. 323
Latest, flown at Philadelphia..... 485

Aviation:

Genealogy of 45

Awards:

Army seeks men entitled to Mackay.. 991
Douglas Davis gets Barber-Baldwin trophy 722
Dr. Finn Malmgren, Swedish scientist receives posthumous medal..... 56
Guggenheim scholarship won by Paul C. Spiess 580
John H. Livingston gets Ford Trophy *922
Mackay cup to Lieut. Harry Sutton..*860
Prizes given for European light tour 1135
Schiff Trophy presented to Naval Squadron *1227
Schlee and Brock given Harmon Trophy 802
A well-earned D.F.C. (ed)..... 455
Winners of Eaglerock, announced... 679

B

Balloons:

Better fabric for..... 236
Gordon Bennett International Race entries 719
International, Race discussed..... 49
Ward T. Van Orman winner in Gordon Bennett Race 799
Bearings, Fafnir S series..... 498
Bingham, Senator, attacked by Thomas L. Hill 948
Blueprinting machine. Pease.....1003
Bohnalite "X" alloy..... 190

Book Reviews:

Air Annual of the British empire. C. G. Burge (ed).....1093
Air pioneering in the Arctic. National American Society.....1050
Aircraft handbook. Fred H. Colvin and Henry F. Colvin.....1243
Annual report of the British Aeronautical Research Committee, 1928-29 1050
Aviation, its commercial and financial aspects 872
Baghdad air mail. Wing Comdr. Roderic Hill 914
Book of airplanes. Lieut. Comdr. J. W. Iseman and Lieut. Sloan Taylor...1190
Book of the aeroplane. Capt. Lawrence J. Pritchard 872
Design and lighting of airports. L. A. S. Wood..... 960
International airports. Stedman S. Hanks 872
Looking ahead in airport lighting. C. E. Weitz..... 960
Lunar ephemeris for aviators. (Aeronautical Supply to American Nautical Almanac.) 1006
Modern aviation engines. Victor W. Page 1189
Oxy-acetylene welder's handbook. M. S. Hendricks 1050
Sky high. The story of aviation. Eric Hodgins and F. Alexander Magoun 1285
Structural design of airplanes. Prof. I. S. Podolsky.....1093
World, the air and the future. Comdr. Sir Charles Dennistoun Burney.... 915
Boundaries, international and commercial aviation (ed) 1099
Brake, multiple disk, devised by Sikorsky *1083
Budget. See Finance.
Budwig, Capt. Gilbert G., named Assistant Director of Aeronautics.....756, 798

C

Cabin, soundproof *1287
Cam grinding machine. Norton.....*161

Canada:

Aeronautical activities in..... 714
Agreement drafted for U. S.—civil flying 987
Air travel grows in..... 583
Quebec Safety League forms aviation branch 1271

Strikes out on her own (ed).....1008
Survey of Canadian commercial aviation. J. A. Wilson (interview by Fay Leone Faurote) (F).....*1250
312 airplanes reported operating in... 488
Canal Zone, airlines in the. Frank Haynes (F) *849
Carbo-Lathe, Porter-Cable *1053
Census time is coming (ed)..... 593

Central America:
Aviation and. Whiting Williams (L) 773
Chart board, wrist..... 190
Chile, eleven airports in..... 769

China:
American airplane market in. Earl F. Baskey *220
Military plane designed in.....*160

Clothing:
Flying suits for women..... 58
Helmets, Scully "Air-mail"..... 58

Clubs:
Cleveland Club now has landing field. 627
College flying, meet at Ohio State... 903
Country, aviation (ed)..... 131
Golf club and the aviator (ed)..... 213
Commerce opportunity (ed).....1189
"Compass, remote indicating." A. H. French (L) 1049
Compass, Star Pathfinder.....*1137
Compressed air propulsion (P).....1191
Controls, with jammed (ed) 133

Costs:
Lowering manufacturing, by specializing production. Charles F. McReynolds (F) *1075
Making airlines pay their way. Thomas E. Morgan (F).....*1165
Country business (ed)..... 553
Crash liability questions arise anew.....1121
Cuddihy, George T. (ed).....1144

D

Derby. See Races and Racing.

Design:
Airplane, session of the S.A.E. Edward P. Warner (F)..... 514
American designer's review of the Schneider race. Grover Loening (F) *650
Bellanca "Tandem" (F).....*659
Development of high speed racing. William Walt, Jr. (F).....*428
Emsco "Challenger" tri-engined monoplane (F) *746
Ryan B-5 Brougham (F).....*336
Trend of, as shown in approved type certificates 702
Weight control in, of aircraft. Frederic Flader (F) 360, 820

Dirigibles. See Airships.
Distribution, national, thorough factory branches. R. Sidney Bower, Jr. (F) *784
Dornier, Dr. Claude, arrives in U. S.....*1079
Drill, Clark electric.....1283
Drill, general purpose. Goodell-Pratt....1137
Drill, Wodack all-purpose.....*357
Dump valve for fluid container (P).....1191
Dr. Eckener granted U. S. patent..... 443

E

Employees:
Aircraft factory personnel. Clifton Johnston (F) *39
Handling personnel in the aircraft factory. Elwood D. Ullman, Jr. (F) *1111

Engines:
Air racing, technique and tactics, (F) Lieut. James H. Doolittle.....*382
Army signs big order 45
Axelson Type B *983
Company to make carburetors..... 48
DeHaviland Gypsy inspected..... 912
Diesel, in airplanes *441
Displays at the Western Show.....1061
Exhibited at the Olympic Aero Show. C. Fayette Taylor *456
Genet Major *1034
Lipe stand for *589
Multi-engine safety (ed)..... 962
New Fairchild engine tested at Farmingdale 1270
Oils for aviation. F. R. Staley (F)..*304
Overhaul methods for OX-5 James P. Wines (F) *298, 333, 479
Production of, increased 78%, first half of 1929..... 543
Reliable power plants for the airship. Lieut. Comdr. James M. Shoemaker (F) *1158
Specifications of, at the Olympia Show 462
Standardization of small engine parts. John F. Hardecker (F) *1016
Technical aspects of the Cleveland Exposition. Leslie E. Neville (F)...*502
Use of Diesel, discussed by S.A.E...1035
"Wasp Junior," Pratt & Whitney..*1119

Exhibitions:
Aero show opens in Baltimore 1172, 1226
Air force pageantry (ed)..... 453
American private pilot looks at the London Aero Show. Earl D. Osborn (F) *292
British show their wares (ed)..... 291
56 entries in St. Louis Exposition..*1228
Forecast of the Cleveland show. (F) Leslie E. Neville 387
Impressions of Olympia. John R. Cautley (F) *565
Inside the exposition building at Cleveland. Leslie E. Neville *467
International Aero Show, London.... 245
Montreal Air Show a success..... 801
National Show in St. Louis, 1930.. 179
New aircraft products at International Exposition of Automotive Parts.. 989
R.A.F. display, 1929, 10th annual. Earl D. Osborn (F) *266
Salesmanship at aircraft shows (ed) 1144
Technical aspects of the Cleveland Exposition. Leslie E. Neville (F). *502
Western Aircraft Show (F) *1038
Western Aircraft Show. Charles F. McReynolds (F) *941
Exhibitions. See also Races.
Expander, Simplex Slap-Check, for engines 287

Exports and Imports:
American airplane market in China. Earl F. Baskey *220
American export trade in aeronautical equipment 710
Plane exports total 275 for 1929...1080
U.A.T., may reach $5,000,000.....2174
U.S. exports 140 craft in ten months 1178

F

Farms, buying, from the air (ed).....1139
Fechet, Maj. Gen. James E. Chief of Air Corps, presents annual report....1078
Fellers, Lieut. W. M., speaks on marine flying, at A.S.M.E.....*571

Finance:
Aeronautical expenditures of foreign governments 715
Benefits of a finance service to aviation. A. A. Hunsaker (F.).....1114
The budget (ed) 1247
Federal budget and aeronautics (F.) 1255
Guggenheim aviation fund to disband at end of year 898
Hoover asks Congress for air service funds 1123
Investment in aviation (ed)..... 773
Wall Street's crash (ed)..... 875
Finishes for aircraft, Glidden..... 324
Fire apparatus, motor 1192
Fire proofing liquid, "Eonite" *689
Fires, preventing and extinguishing aircraft., Lieut. Comdr. C. G. McCord (F.) *1265

Flights and Records:
"All Georgia Tour" 312
Amelia Earhart sets new speed record 1080
Bach plane sets altitude record..... 311
Byrd reaches pole by airplane.....*1120
Chronology and tabulation of airplane and seaplane records (T.)..... 425
Circum-navigation of globe completed by Graf Zeppelin..... 542
Circumnavigated by air (ed) 588
Costes and Bellonte fail in trans-Atlantic attempt 189
Costes and Bellonte France-to-Manchuria flight put at 4,912 mi....1122
Dornier DO-X—some remarks on the flight experienced by Lieut. Comdr. James M. Shoemaker (F.) *1207
Effort sadly misdirected (ed)..... 831
Ends of the earth (ed) 1143
Fauvel makes record for light planes *867
First across Behring Strait. Ralph Wien (L.) 1284
4,850-mile non-stop flight (ed).....1049
German Baron makes notable flight.. 993
Graf Zeppelin lands at Tokio..... 441
Hawks establishes three new 47
Hawks sets a record (ed)..... 25
How the 1929 Air Tour was won. John H. Livingston (F.).....*922
Long range flights to be held in Europe 956
Mamer crosses nation in refueling test 444, 483
Manufacturer participation (ed)..... 133
Mendell and Reinhart (ed)..... 163
Newcomb Byron K. & Mitchell, Roy L. refueling endurance mark.. 150, 178
Observations of a private owner. C. Francis Jenkins (L.)..... 814
Omlie, Mrs. Phoebe, makes altitude record 48
Orlebar sets new record in Supermarine Rolls-Royce S-6 .....*617
Overseas flying, and an editorial policy (ed) 214
Portugese Atlantic flights. Carlos Eduardo Bleck (L.) 1284
Rift in the fog (ed) 735
"Robin" and its crew (ed) 289
"St. Louis Robin" refueling (F.)....*269
Some recent 310
Southern Cross, Australia to England 189
Twenty years ago (ed) 215
Vern Speich claims solo endurance record 760
Wenlin Chen tells of flight from London to Amoy 322
Williams, Roger, & Lewis Yancey fly to Rome 178
Without benefit of publicity (ed).... 592
Zimmerly, D. S., makes light plane tance record 160
Florida drafts state program at Conference 857
Florida State Aeronautical Organization formed 1224
Flying; on making it easy. William F. Worcester (L.) 1242
Ford Motor Company and American aeronautical development. John T. Nevill (F.) *41, 229, 306, 339, 508, 753

France:
Air head seek larger budget 189
Aviation budget cut for next year.. 955
Caudron low-wing monoplane described 913
Confers with Great Britain on airlines 452
Contest held for improved fuels..... 731
Develops equipment of airports.....1238
Diesel engine developed for airplane use 867, 911
French firm gets rights to transport mail 629
International Light Plane Tour..... 354
Latecoére produces new cabin plane *1135
New light plane makes records..... 770
Starting the all-European light plane tour. Earl D. Osborn (F.) *560

Fuel:
Equipment *57
Standard, discussed by Aeronautical Chamber, at Cleveland. Edward P. Warner (F.) *522
Furnace, G. E. heat-treating *631

G

Gage, G. E. gasoline *812
Gas-cell fabric (P.) 1287
Generator, Milburn, acetylene *771

Germany:
Air budget is cut 1047
Albatros L-82 built in Berlin 687
Light plane tour held in 955
Junkers G-38 test flight a success...1000
Rocket plane record made by Fritz von Opel *769
Tail-less plane built in.....*1238, 1239
Glass, Mississippi wire.....*1283

Gliders:
At the National Air Races.....*603
Distance record made by German... 284
First Los Angeles meet held 1171
Future, will be designed to carry outboard engine 949
Hold glider events at National Air Races 47
Meet held at San Diego 680
National Glider Week 859
PT-2 training glider (F.) John T. Nevill 37
Public shows interest in, at Western Show *1060
Record held by German pilot.....322
Goggles, American transport *498
Granados, Col. Miguel Garcia flies from Guatemala 315

Great Britain:
Air route radio services in. C. B. Carr (F.) *834
Air scholarships offered by English newspaper 809
American private pilot looks at the London Aero Show (F.) Earl D. Osborn *292
British state airship R101 (F.).....*850
Confers with France on airlines..... 452
Government will not take part in future Schneider Race 1000
Hendon has annual display..... 189
Inspection of light aircraft to be done by Lloyd's 955
King's Cup race won by Atcherly 160
Lord Thompson named minister of air 56
R.A.F. display, 1929 (F.) Earl D. Osborn *266
R.A.F. puts automatic pilot on planes 1185
Schneider contest in retrospect (F.)..*667
Sport plane, designed in..... 160
Grinder, Blount all purpose.....*957
Grinder, Blount tap.....*631
Grinder, Van Dorn bench.....*324
Guggenheim, Harry F. (ed)..... 649

Guggenheim Safety Competition:
Contestants dwindle to three. Leslie E. Neville *1146
Looking for safer aircraft (F.)...*795, 975
Notes on the...718, 899, 945, 1081, 1113
"Tanager" entered by Curtiss in....*855
Gyroscope "Mecaviator" tests successful 990, 1037, 1047

H

Handicapping, air races and, Capt. R. J. Goodman-Crouch *395
Handsaw, portable electric *812

Hangars:
Austin canopy hangar doors.....*957
Cantilever, at Phoenix 53

Goodyear-Zeppelin dock at Akron, O. Walter E. Burton (F.) *1214
Hangar door drives, A&D *689
Hexagonal hangar for Western Air Express *451
Huge, built at Akron *449
Lumber-built. M. S. Locke (L.) 588
Lumber-built. N. S. Perkins.....*175
Men who built the (ed).....1139
Municipal hangar at Miami airport *1278
New type at Curtiss-Reynolds port..*1043
One and one-half acres of hangar floor space under one roof. Charles F. McReynolds (F.) *556
Sprinkler installation for, tested 997
Why of steel built. M. S. Locke (F.) *787
Wood vs. steel for. N. S. Perkins (L.) 813
Heat treatment of alloy steels in airplane work. Fairchild factory at Farmingdale, L. I. C. B. Phillips (F). *781
Heater, Buffalo "Wetboy" 1283
Heinkel catapult, on S.S. "Bremen" (F)..*263
Helicopter (P.) 1141

Helium:

Amarillo, tests 97.7% pure 904
And the government. E. G. Luening (L.) 814

Helium:

And the government. E. G. Luening (L) 814
Commercial (ed) 554
Mobile, purifier for Goodyear-Zeppelin.1035
Output at Soncy, In July 445
Highpoints in the news.....1171, 1225, 1269
Mr Hill breaks out in a new place (ed)... 920
Hill, Thomas L., makes charges against Senator Bingham 948

Holland:

Air recommendations made at Amsterdam 552
Service between Holland and East Indies resumed 770

I

Indicators:

Engine temperature *324
Frisbie pitch *631
New wind, tested for airways.....*727
Pioneer air log *1096
Rieker pitch and bank 917

Industry:

Brazil seeks aid in American for air interests 1229
Factory co-operation boosts distributor's sales. Douglas W. Clephane (F) *887
Good news (ed) 962
Goes up—goes down (ed) 920
Regional councils and the airplane (ed) 921
Wanted, courage! (ed) 1056
What racing did for the Italian. Commander Silvio Scaroni (F) *400
Insects brought on Graf Zeppelin..... 801
Instinct or instrument? (ed) 1009

Insurance:

British Aviation, recognized by air ministry 246
Guide for, risks issued 1230
Metropolitan Co. seeks approval of rider 1174
International Aeronautical Commission, session in Paris 56
Inventors, problems of the. Frank E. Skroback (L) 588

Italy:

Balbo new minister of air 629
New planes and engines built in....1281
Price scale for port services arranged in 452
What racing did for the Italian industry. Commander Silvio Scaroni (F).*400

J

Japan expands airlines 189
Jones, Edward T. (ed) 592

L

Land leveler, Eversman automatic.....*811
Landing gear (P) 1141, 1191, 1245
Landing gear products 957
Landing lights, Fairchild.....*247
Landing platform (P) 1287

Landing Speeds:

Analysis of A. A. Gassner (L).... 497
Analysis of. Elliott G. Reid..... 192
Letter on. R. G. Gabler 232
Uniform. Elliott G. Reid (L)....356, 497
Uniform. Ralph H. Upson (L) 356
Launching and landing device (P) 1245

Law and Legislation:

Aero loan bill introduced into House.1224
Air commerce rules amended 1268
Air regulation (ed) 163
Aircraft owner liability under the law. Hazelton Mirkil (F) 1260
Federal control sought for regulation of interstate air traffic 863
Five states pass laws for license regulation 484
Heavy penalties for unlicensed planes. 484
Legal responsibilities of carriers of goods and baggage by air. Leo T. Parker (F) *938
License law for pilots 235
Nebraska license filing rule opposed..1036
N. Y. State Commission opposes state air code 756
Punishment for low flying (ed).....1285
State aeronautic, grows 346
Trespass by aviators (ed) 323
Why the highways? (ed) 1098
"Lexington" to aid Tacoma in power shortage 1178

Licenses:

Data on 692, 696, 1125
Statistics of aero, announced by U. S. Aeronautics Branch 312, 797
Lift mechanism (P) 1191
Lightning hazard. Myron S. Huckle (L).. 958

Lights and Lighting:

Airport lighting development, looking ahead in. C. E. Wietz (F) *1100
Airport lighting exhibit at Westinghouse Lighting Exhibit *1279
Beacon towers for T.A.T. 58
Ceiling *58
Crouse-Hinds ADA floodlight *1003
Crouse-Hinds Co. demonstrates 5,000 watt lamp at Omaha airport..... 55
Grosse Isle installs Airport Lighting Inc. system 728
Ideco ceiling light tower *287
Novalux ceiling *58
"Portalite" *161
Retractable landing light.....*1192
S. A. E. discusses aircraft. Edward P. Warner (F) *536
Special, for Columbia Gorge..... 765
Sperry arc floodlight *1053
Loading, light or heavy? (ed)..... 874
Lock washers, shakeproof 1283
Loening to head new design concern....*1173

Lubrication:

Aviation engine oils. F. R. Staley (F) *304
Oil, Wilkins, for aircraft instruments. 57

M

MacCracken, William P., Jr. (ed) 733
MacCracken gets post with Rio line....1177
Mail and express. See Air mail.

Maps:

Air mapping successful 1039
Mapping 13,000 square miles of Alaska. Lieut. E. F. Burkett (F).*1210
More air, to be made 1089

Materials:

Alloys in engine castings. Jerome Lederer (L) 871
Dents and strip steel. W. H. Sayers (L) 772
Heat treatment of alloy steels in airplane work. (Fairchild Factory at Farmingdale, L. I.) C. B. Phillips (F) *781
Light alloys in aircraft—discussion of their range and usefulness conducted by S.A.E. at Cleveland. Edward P. Warner (F) *511
Saving weight at low cost. Horace C. Knerr (F) *1073
Steel (ed) 165
Use of light alloys in aircraft manufacture, discussed by American Electrochemical Society (F) *740
Meets and contests. See Races.

Merchandising:

Building a dealer organization. Lieut. W. Jack Frye *216
Business of selling and servicing parachutes. R. Sidney Bowen, Jr. (F).*744
Light plane requirements. T. J. Duncan Fuller (L) 630
Marketing the light commercial plane. Jack W. Duelks *253
Part the dealer plays. R. Sidney Bowen, Jr. 134
Sales factors in the cabin plane market. Sam Breder *166
S.A.E. discusses commercial aviation and engineering. Edward P. Warner (F) *538

Mergers:

American Aeronautical now controlled by Allied 619
Big merger (Curtiss-Wright Corps.) (ed) 24
Bourdon Corp. and Viking Flying Boat Co. 854
D.A.C. acquires Parks companies.... 618
Kentucky Hydrogen & Oxygen Co. & Helium Company of Louisville, now Girdler Corp. 50
Sikorsky acquired by United Aircraft. 236
Stinson-Cord officially consummated..1038
T.A.T. and Maddux united, rates reduced 1034
Three Portland companies band 762
Washington Air Terminals buys United States Air Transport, Inc. 53
What price merger? Talbot O. Freeman (F) 1105

Meteorology:

Airway observers installed in west.. 909
Boeing weather trucks begin work..1089
Government urges instruction of pilots in 283
Guggenheim Fund urges extension of weather reporting system 280
St. Paul (Minn.) Airport establishes weather service 53
Weather broadcasts now continuous.. 625

Mexico:

Airports being developed in..... 810
Operations on Mexican airways reported 586
Report on military air force in....1281
Micrometer, Starrett, improved 57
Model plane, younger generation and the (ed) 734
Moisture meter 1241
Mooring masts, horsepower vs. man power (ed) 833

N

Name, give the plane a (ed) 735
National Aeronautic Association:

Attacked by Senator Hill 948
Holds eighth annual meeting at Cleveland, 1929 .....*563
Part played by the, in the air races. Hon. Hiram Bingham (F) *376
National Air Races. See Races and Racing.

National Defense:

Air Races and. Hon. F. Trubee Davison and Hon. David S. Ingalls (F).*380
Military value of airplane racing. Lieut. Comdr. Frank W. Wead (F).*418

National Safety Council:

Discusses safety work in aviation. Edward P. Warner (F) *749

Newspapers:

Accidents and. Jetson O. Bentley (L).1005
Plane fitted for reporters of "Detroit News" 622
Thirsting for a thrill (ed) 326
Noise abatement (ed) 777

P

Paint sprayer, Breuer electric.....1096
Painting equipment, Spraco *1192

Parachutes:

Business of selling and servicing. R. Sidney Bowen, Jr. (F) *744
Must meet Government requirements. 313
Parachute, Robur, makes appearance. 284
Parachutes (P) 1245
Porosity of, studied by navy..... 722
Saved 200 lives in this country.....1178
Stunts in. George Waite (L) 630
A wise precaution (ed) 500
Performance trials, certified, and safety ratings. Lieut. Comdr. Frank Wead (F) 1108

Personnel:

Personnel and progress. Karl H. White (L) 1092
Personnel now or progress later (ed). 873
Pirating of trained, editorials regarding this subject 1168
Pick-up for cargo (P) 1191
Pilot static tube, monoplane.....*771
Pilot, valve *57

Pilots:

A contribution to aviation (ed) 1049
Campaign for million glider, launched..1174
Human factor in flying. J. B. Culemans 1163
Impolite (L) 1242
Instruction status of, explained..... 48
More and better navigation (ed) 874
Private. Merrill C. Meigs (L).....1139
Private, and their problems. Earl D. Osborn (F) *778
Satistics on, announced by T.A.T.... 319
Training, for airline operation. (Colonial Flying Service) Charles H. Wooley (F) *967
Plier, "Kant Slip" 1053

Poland:

Air lines in, have high record.....1000
Aviation law conference at Warsaw.1134

Polar Expedition:

Byrd and crew fly over South Pole..*1120
Exhibit of Byrd Expedition to four cities 1271

Production:

Data on, and licenses 692
Ford Motor Company and American aeronautic development. John T. Nevill (F) *753
Importance of the National Sales Organization. R. Sidney Bowen, Jr. (F) *1152
Lowering manufacturing costs by specializing. Charles F. McReynolds (F) *1075
Methods at the Great Lakes Aircraft Plant. Walter E. Burton (F)....*970
Over- (ed) 775
Reports, presented to Aeronautical Chamber at Cleveland. Edward P. Warner (F) 519

*Illustrated; (ed) Editorial; (F) Feature article; (L) Letter; (P) Patent

Propellers:
Auxiliary horizontal (P) 1191
For dirigible craft (P) 1141
Guard for (P) 1141
McLeod firm formed in west.....1176
Production of lift by, blades. Max M. Munk (F) 816
Dr. Reed answers a propeller pitch question by Mr. Cabot (L)..... 914
S.A.E. propeller and power plant sessions. Edward P. Warner..... 469

Public Relations:
Personnel now or progress later? (ed) 873
Pirating of trained personnel — editorial opinions 1168
Publicity that helps the industry (ed)....1144

R

Races and Racing:
Air, and handicapping. Capt. R. J. Goodman-Crouch (F) *395
Air, and national defense. Hon. F. Trubee Davison and Hon. David S. Ingalls (F) *380
Air race handicapping. Luke Christopher (L) 870
Air race methods. R. E. Lewis (L)..1138
America and the Schneider. Andre A. Priester (L) 772
American designer's review of the Schenider. Grover Loening (F)....*650
Atcherly wins Cup race in England.. 160
Bloomington Flying Club, July 11 Air Show and Derby 54
Development of high speed, design. William Wait, Jr. (F) *428
Do, stimulate sales? E. M. Laird (F) .*436
Entrants at Cleveland, 1929. John T. Nevill (F) *524
Errett Williams wins Brandeis Derby. 988
Eugene, Ore., July 25, Air Derby.... 54
Feature Oil Exposition 721
Final preparations for the National Air. John T. Nevill (F) *328
Free-for-all (ed) 501
Future of the Schneider Trophy Contest (F) 791
Kansas City, International Air Circus and Pilot's Reunion 674, 720
Layout of the Schneider course.....*575
Lessons from the air. Edward P. Warner (F) *663
Los Angeles races one year after. Charles F. McReynolds (F) *432
Meditations on the Schneider (ed)... 592
Military value of airplane. Lieut. Comdr. Frank W. Wead (F).....*418
Mt. Tom airport, Northampton, Mass., July 4 54
National Air, and commercial aviation. Maj. Clarence M. Young (F).....*379
National, day by day and in summary (1929). John T. Nevill (F) *524
National Meet of Sportsflyers—Denver, Aug. 10-11 54
Nine years of National Air. James P. Wines (F) *404
The 1929 air, get under way. Herbert F. Powell *464
1929 Schneider Trophy Contest. (By Aviation's British correspondent) (F) *610
Program of Cleveland meeting (1929). 417, 438
Roosevelt Field, L. I., meet June 30, Doolittle and Hawks participate... 54
Schneider contest in retrospect (F)..*667
Schneider cup won by England..... 574
Stock models and. R. E. Lees (L).. 958
Tabulated account of National Air (1929) day by day. John T. Nevill (F) *524
Technical note on the Schneider (ed). 648
Technique and tactics. Lieut. James H. Doolittle (F) *382
The test block for aviation. Bruce G. Leighton (F) 393
Value of, and the stock model. C. S. Jones (F) *422
What, did for the Italian industry. Commander Silvio Scaroni (F)....*400
Women in Air (ed) 132
Women's Air Derby (1929)..... 439
Races. See also Tours.

Radio:
Air route, services, in Great Britain. C. B. Carr (F) *834
Airway, progress. Martin Codel (F).*979
Communication by, from plane to ground. Frank L. Curtis (F)....*1262
Ground-to-plane and plane-to-ground» plans adopted 351
Landing beam development advances.1277
Light-weight set developed by Marconi 321
New, sets announced by airlines....1181
Permanent, plan announced 683
Range chain and code symbols.....*908
Research, planned by Bureau of Standards 158
Southern Air Transport installing two-way 53
Use of one frequency in plane radios tested 449, 768

Rates:
Air mail, under discussion...188, 765, 803, 863, 907, 952, 997, 1183
An anxious look at a closed door (ed) 919
Cutting, on air lines (ed) 1055
Lowered on more passenger lines....1279
Southern Air Transport announces change of 319
Special, for blind passengers..... 765
"Recorder, Servis," *589
Records. See Flights and records.
"Refueling," what constitutes? (ed)..... 327

Regulations:
Airworthiness, discussed by Aeronautical Chamber at Cleveland. Edward P. Warner (F) 520
Aviation regulation (ed) 1006
Dual controls and joy-hopping Gordon Ratcliff (L) 1049
For flying schools, discussed by Aeronautical Chamber at Cleveland. Edward P. Warner (F) 523
Many violations of air, during past year 801
Oregon state board of aeronautics passes airworthiness rules 1123
Plane test code amendments made...1171
The police commissioner takes the reins (ed) 591
Sample field, issued by Aeronautics Branch 728
Scylla and Charybdis of government (ed) 831
Trusting the trustworthy (ed).....1247
Regulator, Prest-o-weld *1137
Richardson, Capt. H. C., speaks on marine flying at A.S.M.E.....*571
Rocket plane, Opel—a description of the (F) *931
Rohrbach, Dr. Adolph, speaks on marine flying at A.S.M.E. *571
Runway experiment described, St. Louis.. 998

Russia:
Airway system extended..... 285
Coming from the U. S. S. R. (ed).... 832
"Land of the Soviets" arrives in U. S. *800, 944, 989

S

Safe Aircraft Competition. See Guggenheim Safety Competition.
Safety ratings, and certified performance trials. Lieut. Comdr. Frank Wead (F) 1108
Safety, talking (ed) 1195
Safety. See Accidents and Accident Prevention.

Sales:
Air passengers as a lost opportunity (ed) 1145
Aircraft, financing of. Willis Parker 227
Cheaper airplanes, B.V.D. (L).....1242
Cultivating airplane, soil (ed) 874
Do airplane races stimulate. E. M. Laird (F) *436
Expanding markets while promoting. Justin A. McInaney (F) 331
Factory co-operation boosts distributor. Douglas W. Clephane (F) *887
Forestalling the used plane problem (ed) 832
Importance of the National Sales Organization. R. Sidney Bowen, Jr. (F) *1152
Navy orders planes 154
Salesmen not pilots (ed) 1194
Wanted—a solution of the used plane problem. Charles F. McReynolds (F) *964
Where do we sell next? (ed) 1007
San Diego—a neglected city. Thomas F. Bomar (L) 1138
Sanding machines, Nedco.....*1283
Scale, Fairbanks airplane *1241
Schneider Cup Race. See Races and Racing.
Schools 183, 238, 279, 317, 347, 447, 488, 548, 582, 622, 682, 725, 763, 803, 862, 906, 950, 996, 1040, 1084, 1127, 1180, 1233, 1276

Schools and Training:
Arrow Aircraft opens school in airplane building 48
Dayton (O.) to have elaborate school. 50
Glider school opens at Cape Cod.... 47
Human factor in flying. J. B. Culemans (F) 1163
List of approved air, reaches eleven.. 759
Rating awards granted 233
Separate corner for the student (ed). 777
Service organization of Parks Air College, East St. Louis, Illinois. James P. Wines (F) *298, 333, 479
Training pilots for airline operation, Colonial Flying Service. Charles H. Wooley (F) *967
Universal Aviation School has extension courses 1082
Schwab, Charles M., makes entrance into aviation field 676
Screw drivers, Stanley electric.....*869
Screw thread, Dardelet *1241
Seadrome experiments continue 158

Seaplanes:
Chronology and tabulation of, records. 425
Discussed at Cleveland, by A.S.M.E. Edward P. Warner (F) *571
New plane designed in England..... 687
One-wheel float for 49
Research (ed) 1194
Watertight subdivisions, hulls and floats. Lt. Comdr. William Nelson (F) ..... †34
Seeing football from the air (ed) 1056

Service and Maintenance:
Engine service from coast to coast. R. Sidney Bowen, Jr. (F) *601
Gas and oil service (ed) 593
Idea to lower upkeep. E. W. Beebe (L) 1284
Pratt and Whitney Co. has 24 service bases 758
Richfield Oil Co. installs 34 beacons.*766
Shielding equipment, ignition 811
Ship-shore service from Ile de France, and Bremen 492
Shock cord "Airport Package" 812
Sikorsky, Igor, speaks on marine flying at A.S.M.E. *571
Sky barriers, overcoming (ed) 1005
Sky writing (P) 1141
Soaring device (P) 1191

Society of Automotive Engineers:
Airplane design session of the. Edward P. Warner (F) 514
Discuss aviation fuel and engine performance 46
Discusses commercial aviation and engineering. Edward P. Warner (F).*538
Discussion of light alloys in aircraft. Edward P. Warner (F) *511
Discussion of standards and aircraft lighting. Edward P. Warner (F)..*536
Propeller and power plant sessions. Edward P. Warner 469
Soundproofing of airplane cabins. V. L. Chrisler (F) *1021
Spark plug, Champion Aero A.....*589

Specifications:
On American commercial airplanes compiled by Aviation (Suppl. to Sept. 21, 1929)
Of airplanes at the Olympia Show ... 462
Speed, high, safety factor in airplane. J. Don Alexander (F) *1117

Spinning:
Flat spin. Lieut. Ralph A. Ofstie (F) *1203
An official view. Clarence M. Young (L) 232
In schools (ed) 250
Tail spins. Capt. Harry A. Sutton (F) *1196
Tests, discussed by Aeronautical Chamber at Cleveland. Edward P. Warner (F) 522
Tests to be considered 442
Spraying unit, Binks *812
Sprinkler system tested at Newark *1131

Standardization:
Of small engine parts. John F. Hardecker (F) *1016
S.A.E. discusses standards. Edward P. Warner (F) *536
Statistical number. Edsel Ford (L) 1004
Statistical number. Introduction (ed).... 691
Steel shop equipment *811

Stowaways:
Gate-crashing epidemic on aircraft (ed) 326
Strainer, gasoline, by Lunkenheimer Co...†287

Stunting:
Air racing and. Dr. Don Crawford (L) 814
And an airminded public (ed).....1050
And circus flying. Walter H. Beech (L) 497
Another view on. Lessiter C. Milburn (L) 870
Civilian (ed) 499
Fool stunts (ed) 131
Sucker money (ed) 649

Surveys:
Air route studied by Russians on fight.1131
Air survey of Alaska, by Navy unit.. 154
Aircraft sales field to be surveyed..1080
Curtis Publishing Co. plans survey of aircraft industry 50
N. Y. Air Commission conducts law..1084
Planes used for oil 1177

Switzerland:
Reorganization of air force to cost $4,000,000 1090

T

Tachometer shaft *498
Tail wheel unit, Oleo-Pneumatic *631
Takeoff from auto *1125
Terminal, Rajah improved 771

Terminology:
Aviation and the dictionary. Frank H. Vizetelly (L) 1004
Cryptic colloquialisms. H. K. Iling (L) 1188
Lexicographers take a hand (ed).... 734
Real words and slang. Capt. R. W. A. Brewer (L) 1188

Tests:
Amsler testing machine used by aircraft factory *276
Bernard 20C1, single pace fighter flight tested *1281
Curtis Condor *234
Dornier DoX, trial successful.....*245
Dusting, carried on by government.. 153
Effects of lightning on airplanes studied 1039
Engine equipment of St. Louis Robin (F) *269
Gyroscope "Mecaviator" tests successful 990, 1037, 1047
Initial lightning, made at Barberton (O.) laboratory 1177
"Los Angeles" tested as airplane carrier 486

*Illustrated; (ed) Editorial; (F) Feature article; (L) Letter; (P) Patent

McCloud reversible and adjustable pitch propeller successfully used...1082
More work for the Department of Commerce (ed) 963
Of Hodkinson tri-engined plane conducted 486
Of Lear and Fleetcraft planes..... 487
Static, conducted on Great Lakes trainer 315
Subsidized test bureau? Wm. Kirkpatrick (L) 1138
Lieut. Williams "Mercury"..... *344
Wind tunnel, held at University of Michigan 856
Thunderstorm, aircraft and the. W. J. Humphreys (F) 981

Tours:
Air, service to aviation (ed) 776
All-California tour completed 994
All entrants finish Indiana tour.... 719
All-Nebraska Air Tour 620
American Eagle Goodwill fliers.....*1269
Arkansas Air Tour 721
California Air, held in conjunction with Aircraft Show. Charles F. McReynolds (F) *941
"Carrier Pigeon" and the tour (L)... 870
Competitors and planes in European Air Tour. R. J. de Marolles (F)..*1219
Fifth Annual National Air Tour. John T. Nevill (F) *670, 736, 844, 876
General Tire fleet in 32-day tour....1127
How Europe ran an air tour. R. J. de Marolles (F) *1219
How the 1929 Air Tour was won. John H. Livingston (F) *922
Livingston wins in air tour..... 854
National Air Tour officials arrange 1930 tour 1176
Random observations of an air tour passenger. Edward P. Warner (F) *892
Showmanship in scenic air. Willis Parker (F) *936
Starting the all-European light plane tour. Earl D. Osborn (F)..... *560
What of the 1930 National Air Tour? John T. Nevill (F) *1012
Tours. See also Races and Racing.

Traffic:
First National Air Conference. John T. Nevill (F) *653
Flying high and quiet (ed)..... 356
U. S. air mail operations and..... 706
Training. See Schools and Training.

Transportation:
Aero Branch reports statistics for first half of 1929.....1086
Air express, future of the. Col. Harry H. Blee (F) *1155
Air transport and the railroad. Charles W. Foss (L) 958
Airlines in the Canal Zone. Frank Haynes (F) *849
Airplane and railroad work in double harness (ed) 23
Air-rail station at Port Columbus. Walter E. Burton (F) *889
Air-rail system links Texas and New Mexico 53
Airship line discussed with Eckener.. 583
Air travel ticket office. Walter E. Burton (F) *265
Alaska-Washington firm opens services 683
Americans contribute to European airlines 1186
Canadian-American Airlines purchased by Schlee-Brock 856
Daily service between Cleveland and Youngstown, July 1 53
Developing specialized, facilities (ed). 961
Development of air transport activities in U. S. 704
Diversifying terminal facilities (ed)..1193
"First stop San Francisco" (ed)..... 164
Foreign air transport, express and mail 717
Highways of the air (ed) 1243
Institute of Politics considers. in Latin America 348
Legal responsibilities of carriers of gvods and baggage by air. Leo T. Parker (F) *938
Making airlines pay their way. Thomas E. Morgan (F) *1165
National Air Transport extends day service 53
New York and Mexico joined by air rail service 583
N. Y.-Miami service started 766
N. Y. and Rio line reports progress..1042
Operation of the Thompson Aeronautical Corp. lines. John T. Nevill (F). *606
P.A.T. speeds up service 54
Pickwick Corp. combines night coach and plane transport 55
Plane to ground communication by radio. Frank L. Curtis (F).... *1262
Railroads take alarm (ed) 647
Road over the Atlantic (ed)..... 1057
S.A.E. discusses commercial aviation. Edward P. Warner (F) *538
Speaking of progress. M. E. Tracy. Scripps-Howard Newspapers (ed).. 773
T.A.T. 48-hour coast to coast by air-rail service. James P. Wines (F) *26
T.A.T. spent $3,000,000 preparng for line 243
Western Air Express fastest time to Los Angeles 157
Trophies, aviation 498
Trucks, Oxweld generator *324

Tubing:
Metal. "Aeroflex" 287
Saving weight at low cost. Horace C. Knerr (F) *1073
Titeflex metal *869
Turkish aviation mission visits U. S..... *545

U. S. Aeronautics Branch:
Announces statistics section 309
Annual report issued by 1032
Awards ratings to schools 233
Kenneth M. Lane to head Engineering Section (ed) 250
New divisions formed 990
Sketches of personnel of. Donald E. Keyhoe *142

U

Used plane problem. Wanted—a solution of the. Charles F. McReynolds (F)..*964

V

Vigilance committee for Roosevelt Field.. 188

W

Water system, Westinghouse Electric....*869
Welding rod, Hascrome 1137

Wheels:
Air, for airplanes. A. J. Musselman (F) *792
Goodyear Air- *357
Wind cone (P) 1141
Wind cone, new type developed..... 997

Wings:
Airplane design session of the S.A.E. Edward P. Warner (F) 514
Analysis of, and other indeterminate structures. Jean Fradiss and Armand Thieblot (F) .....†195, 644
An answer to Dr. Thalen. Jean Fradiss and Armand Thieblot (L) 1188
Auxiliary (P) 1245
British methods of construction. W. H. Sayers (F) *203, 370
Extensible (P) 1141
Indeterminate structure design. Dr. Karl Thalan* (L) 959
Supports for wing tips (P) 1141
Wire vise, Stangbye 689

Women Fliers:
The ladies come through (ed) 499
Nineteen women in Air Derby 439
Wood cutter, De Walt, used in aircraft factories *247

Y

Young, Clarence M.—The new secretary (ed) 454, 483, 757

INDEX OF AUTHORS

Alexander, J. Don. High speed as a safety factor in the airplane (F).....*1117

Baskey, Earl F. American airplane market in China *200
Bingham, Hon. Hiram. National Aeronautic Association's part.....*376
Blackburn, E. C., Jr. Heating and ventilating for airport buildings †30, †146, †171
Blee, Col. Harry H. Future of the air express (F) *1155
Boehnlein, Charles. Integration of the theoretical expression for drag (F) 826
Bowen, R. Sidney, Jr. Advertising pays..*222
Business of selling and servicing parachutes (F) *744
Engine service from coast to coast (F) *601
Importance of the national sales organization (F) *1152
National distribution through factory branches (F) *784
Part that the dealer plays..... 134
Breder, Sam. Sales factors in the cabin plane market *166
Bullard, J. E. and Avery E. Lord. Making the airport pay for itself (F) *932, 1023
Burkett, Lieut. E. F. Mapping 13,000 square miles of Alaska (F).....*1210
Burton, Walter E. Air-rail statio nat Port Columbus (F) *889
Burton, Walter E.:
Air travel ticket office.....*265
Goodyear-Zeppelin dock at Akron, Ohio (F) *1214
Production methods at the Great Lakes aircraft plant (F) *970

Carr, C. B. Air route radio services in Great Britain (F).....*834
Cautley, John R. Impressions of Olympia (F) *565
Chrisler, V. L. Soundproofing of airplane cabins (F) *1021
Clark, Col. V. E. Airfoil profile drag.... 634
Clephane, Douglas W. Factory co-operation boosts distributor sales (F)..*887
Codel, Martin. Airway radio progress (F) *979
Culemans, J. B. Human factor in flying 1163
Curtis, Frank L. Plane and ground communication by radio (F).....*1262
Curtis, Frank L. Review of aviation accomplishments (F) *1010

Davison, Hon. F. Trubee. Air races and the national defense.....*380
Doolittle, Lieut. James H. Air racing technique and tactics.....*382
Duelks, Jack W. Marketing the light commercial airplane *252

Faurote, Fay Leone. Interview with J. A. Wilson, on Canadian commercial aviation *1250
Flader, Frederic. Weight control in the design of aircraft.....360, 820
Fradiss, Jean and Armand Thieblot. Analysis of wings and other indeterminate structures .....†195, †644
Freeman, Talbot O. What price merger? (F) 1105
Frye, Lieut. W. Jack. Building a dealer organization *216

Gale, Charles H. The road builders consider municipal airports (F).....*883
Goodman-Crouch, Capt. R. J. Air races and handicapping *395

Hardecker, John F. Standardization of small engine parts (F).....1016
Hartz, Col. R. S. Tunison "Scout" monoplane .....†*137
Haynes, Frank. Airlines in the canal zone (F) *849
Huckle, M. S. and C. E. Taylor. Heat flow in aircraft engine pistons.....*639
Humphreys, W. J. Aircraft and the thunderstorm (F) *981
Hunsaker, A. O. Benefits of a finance service to aviation (F).....*114

Ingalls, Hon. David S. Air races and national defense *380

Johnston, Clinton. Facts about aircraft factory personnel *39
Jones, C. S. Value of airplane racing and the stock model.....*422

Keyhoe, Donald E. Short sketches of the aeronautics personnel *142
Knerr, Horace C. Saving weight at low cost (F) *1073

Laird, E. M. Do airplane races stimulate sales? *436
Leighton, Bruce G. Races—the test block for aviation 393
Livingston, John H. How the 1929 air tour was won (F).....*922
Locke, M. S. The why of steel built hangars (F) *787
Loening, Grover. American designer's review of the Schneider Race (F).. 650
Lord, Avery E. and J. E. Bullard. Making the airport pay for itself (F) *932, 1023

McAvoy, William H. Notes on design of the N.A.C.A. Cowling.....*636
McCord, Lieut. Comdr. C. G. Preventing and extinguishing aircraft fires (F) *1265
McInaney, Justin A. Expanding markets while promoting sales.....*331
McReynolds, Charles F.:
Los Angeles Metropolitan airport... *256
Los Angeles races one year after....*432
Lowering manufacturing costs by specializing production (F).....*1075
One and one-half acres of hangar floor space under one roof (F).. *556
The Prest "Baby Pursuit".....*301
Wanted—a solution on the used plane problem (F) *964
Western aircraft show (F).....*941

Marolles, R. J. de. How Europe ran an air tour (F).....*1219
Means, Howard Huyler. Airport post office (F) *1259
Merrill, Albert. Penaud versus the Canard types 369
Millikan, Clark B. Induced drag viewpoint of performance 364
Mirkil, Hazelton. Aircraft own liat under the law (F) .....
Morgan, Thomas E. Making rlines their way (F).....
Munk, Max M. Production of propeller blades (F).....*816

*Illustrated; (ed) Editorial; (F) Feature article; (L) Letter; (P) Patent

Musselman, A. J. Airwheels for airplanes (F) *792

Nelson, William. Lt. Comdr. U. S. N. Watertight subdivision of seaplane hulls and floats ..... †34
Nevill, John T.:
Final preparations for the National Air Races *328
First flights of the metal-clad airship *474
First National Air Traffic conference (F) *653
Ford Motor Company and American aeronautical development *41, 229, 306, 339, 568
National Air Races day by day and in summary *524
Operation of the Thompson Aeronautical Corporation lines (F) *606
PT-2 training glider *37
With the National Air Tour (F) *670, 736, 844, 876
What of the 1930 national air tour? (F) *1012
Neville, Leslie E.:
Forecast of the Cleveland show *387
Neville, Leslie E. General mailplane (F) *839
The Hall shipboard fighter (F) *1067
Inside the exposition building at Cleveland *467
Safety Competition to date (F) *1146
Technical aspects of the Cleveland Exposition *502

Ober, Shatswell. Estimation of the characteristics of modified airfoils (F) 830
Ofstie, Lieut. Ralph A. The flat spin (F) *1203
Osborn, Earl D.:
An American private pilot looks at the London Aero Show *292
Private pilots and their problems (F) *778
Royal Air Force display *266
Starting the all-European light plant tour (F) *560

Parker, Leo T.: Legal responsibilities of carriers of goods and baggage by air (F) *938
Parker, Willis. Showmanship in scenic air tours (F) *936
Perkins, N. S. Lumber built airplane hangars *175
Phillips, C. B. Heat treatment of alloy steels in airplane work (F) *781
Powell, Herbert F. The 1929 Air Races get under way *464

Reid, Elliott G. Analysis of airplane landing speeds 192

Sayers, W. H. British methods of steel aircraft construction (F) ..... †203, †370
Scaroni, Commander Silvio. What racing did for the Italian industry *400
Shoemaker, Lieut. Comdr. James M. Dornier Do.X (F) *1207
Reliable power plants for the airship (F) *1158
Staley, F. R. Some pertinent facts about aviation engine oils *304
Sutton, Capt. Harry A. Tail spins (F) .. *1196

Taylor, C. Fayette. Study of the engines exhibited at the Olympia Aero Show *456
Taylor, C. F. and M. S. Huckle. Heat flow in aircraft engine pistons *639
Thieblot, Armand and Jean Fradiss. Analysis of wings and other indeterminate structures ..... †195, †644

Ullman, Elwood D. Jr. Handling personnel in the aircraft factory (F) *1111

Wait, William, Jr. Development of high speed racing design *428
Warner, Edward P.:
Aeronautical Chamber talks of many things *519
Airplane design session of the S.A.E. 514
A.S.M.E. seaplane meeting at Cleveland (F) *571
Commercial aviation and engineering 538
Lessons from the races (F) *663
Light alloys in aircraft, discussion of their range and usefulness conducted by S.A.E. at Cleveland *511
Random observations of an air tour passenger (F) *892
Safety work in aviation (F) 749
S.A.E. discusses standards and aircraft lighting *537
S.A.E. propeller and power plant sessions 469
Whead, Lieut. Comdr. Frank:
Certified performance trials and safety ratings (F) 1108
Military value of airplane racing ... *418
Wietz, C. E. Looking ahead in airport lighting development (F) *1100
Wilkins, Captain Sir Hubert: Some aspects of the Graf Zeppelin's flight around the world (F) *594
Wilson, J. A.: Survey of Canadian commercial aviation. (Interview by Fay Leone Faurote) *1250
Wines, James P.:
48-hour coast to coast air-rail service of T.A.T. *26
Nine years of National Air Racing ... *404
Overhaul methods for OX-5 engines *298, 333, 479
Wooley, Maj. Charles H. Training pilots for airline operation (F) *967

Young, Maj. Clarence M. National Air Races and commercial aviation *379

*Illustrated; (ed) Editorial; (F) Feature article; (L) Letter; (P) Patent